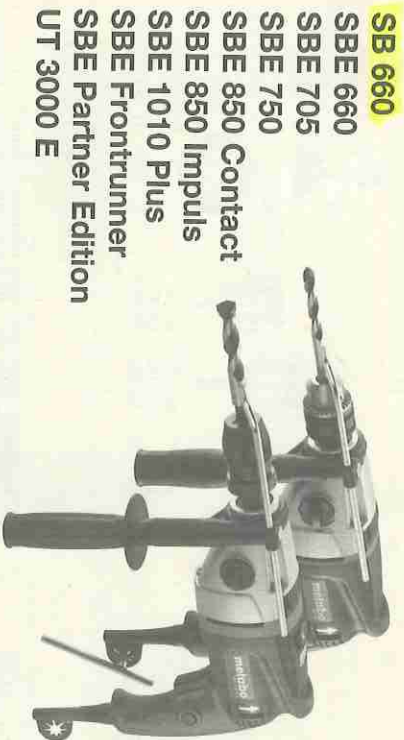
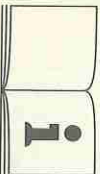


metabo®

Made in Germany



SB 660
SBE 660
SBE 705
SBE 750
SBE 850 Contact
SBE 850 Impuls
SBE 1010 Plus
SBE Frontrunner
SBE Partner Edition
UT 3000 E



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		P ₂	W		SB 660														
		n ₁	/min		SBE 705														
		n ₂	/min		SBE 750 SBE Partner Edition SBE Frontrunner UT 3000 E														
		ø max.	mm (in)		SBE 850 Contact														
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Operating Instructions

Dear Customer,

Thank you for the trust you have placed in us by buying a Metabo power tool. Each Metabo power tool is carefully tested and subject to strict quality controls by Metabo's quality assurance. Nevertheless, the service life of a power tool depends to a great extent on you. Please observe the information contained in these instructions and the enclosed documentation. The more carefully you treat your Metabo power tool, the longer it will provide dependable service.

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- 1 Declaration of Conformity
- 2 Specified Conditions of Use
- 3 General Safety Information
- 4 Overview
- 5 Special Product Features
- 6 Start of Operation
- 7 Start of Operation
- 8 Use
 - 8.1 Depth stop setting
 - 8.2 Switching on/off
 - 8.3 Speed preselection
 - 8.4 Gear selection
 - 8.5 Changing between drilling/impact drilling
 - 8.6 Selection of direction of rotation
 - 8.7 Tool change with Futuro Top keyless chuck
 - 8.8 Tool change with Futuro Plus keyless chuck
 - 8.9 Tool change with geared chuck
 - 8.10 Contact mode
 - 8.11 Impulse mode
 - 8.12 Torque limiter
 - 8.13 Removing the drill chuck
- 9 Tips and Tricks
- 10 Maintenance
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1 Declaration of Conformity

We, being solely responsible, hereby declare that this product conforms to the standards and directives specified on page 2.

2 Specified Conditions of Use

The machine is suitable for non-impact drilling into metal, wood, plastic and similar materials and for impact drilling into concrete, stone and other such materials. Furthermore the machine is suitable for tapping and screw driving (not SB 660).

The user bears sole responsibility for any damage caused by inappropriate use. Generally accepted accident prevention regulations and the enclosed safety information must be observed.

3 General Safety Information



WARNING – Reading the operating instructions will reduce the risk of injury.

WARNING Read all safety warnings and instructions. Failure to follow all safety warnings and instructions may result in electric shock, fire and/or serious injury.

Keep all safety instructions and information for future reference. Before using the power tool, carefully read through and familiarise yourself with all the enclosed safety information and the Operating Instructions. Keep all enclosed documentation for future reference, and pass on your power tool only together with this documentation.

4 Special Safety Information



For your own protection and the protection of your power tool, observe the passages marked by this symbol!

Always wear hearing protection when using hammer drills. Exposure to noise can cause loss of hearing.

Use the additional handle supplied with the tool. Loss of control can lead to injuries.

Hold the power tool by insulated gripping surfaces when performing an operation where the cutting accessory may contact hidden wiring or its own cord. Cutting accessory contacting a "live" wire may make exposed metal parts of the power tool "live" and shock the operator.

Pull the plug out of the plug socket before any adjustments or servicing are performed.

Avoid inadvertent starts by always unlocking the switch when the plug is removed from the mains socket or in case of a power cut. Not necessary with VTC electronics (electronic restart protection). Ensure that the spot where you wish to work is free of **power cables, gas lines or water pipes** (e.g. using a metal detector).

Keep hands away from the rotating tool

Remove chips and similar material only with the machine at standstill.

Metabo S-automatic safety clutch.

When the safety clutch responds, switch off the machine immediately!

Caution must be exercised when driving screws into hard materials (driving screws with metric or imperial threads into steel). The screw head may break or a high reverse torque may build up on the handle.

Dust from material such as paint containing lead, some wood species, minerals and metal may be harmful. Contact with or inhalation of the dust may cause allergic reactions and/or respiratory diseases to the operator or bystanders. Certain kinds of dust are classified as carcinogenic such as oak and beech dust especially in conjunction with adhesives for wood conditioning (chromate, wood preservative). Material containing asbestos must only be treated by specialists.

Where the use of a dust extraction device is possible it shall be used.

The work place must be well ventilated.

The use of a dust mask of filter class P2 is recommended.

Follow national requirements for the materials you want to work with.

5 Overview

See page 3 (please unfold).

- 1 Geared chuck *
- 2 Keyless chuck Futuro Plus *
- 3 Keyless chuck Futuro Top *
- 4 Depth stop
- 5 Control knob for gear selection
- 6 Slide switch for drilling/impact drilling
- 7 Contact mode indicator *
- 8 Contact mode on/off switch button *
- 9 Ribbed knob for impulse mode preselection *
- 10 Electronic signal indicator *
- 11 Lock button
- 12 Speed preselection wheel *
- 13 Trigger
- 14 Selector switch for direction of rotation *
- 15 Drill bit storage *
- 16 Side handle/Side handle with rubber coating *

* depending on machine type

6 Special Product Features

Metabo S-automatic safety clutch:

If the insertion tool jams or hooks, the power flow to the engine will be restricted. Because of the high power which then arises, always hold the machine with both hands on the handles, stand safely, and concentrate on your work.

Auto-stop carbon brushes:

If the brushes are completely worn, the machine switches off automatically. With VTC electronics: A LED warns before the brushes are completely worn.

Restart protection with VTC electronics:

(SBE 1010 Plus)
The restart protection prevents an unintentional starting of the machine when being plugged in again and when power is restored after a power failure.

Overload protection indicator with VTC electronics:

(SBE 1010 Plus)
The overload protection indicator warns of an impending overload.

Metabo impulse mode:

(SBE 850 Impuls)
For effortless turning-out seized screws, even with damaged screw heads.

For exact centering, without the need for a centre punching, in tiles, aluminium or other materials.

Electronic torque limiter:

(SBE 850 pulse)
When driving small screws or tapping threads by means of taps with a small diameter the torque can be reduced to a value that suits the job to be performed.

Metabo contact mode:

(SBE 850 Contact)
For intelligent drilling in walls with installed electric or water lines. As soon as the inserted tool makes contact with conductive, earthed material or live supply cables, the machine switches off immediately.

7 Start of Operation

Before plugging in check to see that the rated mains voltage and power frequency, as stated on the name plate, match with your power supply.

To ensure that the drill chuck is securely fitted: After initial drilling (clockwise), use a screwdriver to firmly tighten the safety screw inside the drill chuck (if applicable, model-specific). Caution left-handed thread! (see Section 8.13)

7.1 Side handle installation

⚠ For safety reasons, always use the side handle supplied.

Open the clamping ring by turning the side handle (16) counter-clockwise. Place the side handle onto the machine's collar. Insert the depth stop (4). Tighten the side handle in the required angle depending on the task at hand.

8 Use

8.1 Depth stop setting

Loosen the side handle (16). Set depth stop (4) to the desired drilling depth and retighten the side handle.

8.2 Switching on/off

To start the machine, press the trigger (13). The speed can be changed at the trigger (not SB 660).

Due to the electronic soft start the machine accelerates continuously up to the pre-selected speed (SBE 1010 Plus, SBE 850 Impuls, SBE 850 Contact).

For continuous operation the trigger can be locked with the lock button (11). To stop the machine, press the trigger again.

⚠ If switched on continuously, the machine continues running if it is jerked out of your hands. Therefore, always hold the machine with both hands on the handles, stand safely, and concentrate on your work.

8.3 Speed preselection

(not for SB 660)

Pre-select the max. speed with the preselection wheel (12). See page 4 for recommended drilling speeds.

8.4 Gear selection

Select the desired gear by turning the control knob (5).

Change gears only with the machine coming to a complete standstill (start and switch right off again).



1. gear
(low speed, high torque)
e.g. for screwing twist drilling

8.5 Changing between twist drilling/impact drilling

Select desired operating mode by shifting the slide switch (6) as required.

Twist drilling

Impact drilling

Use high speed for impact drilling. Set control knob (5) to . Impact and twist drilling can be done only with a clockwise direction of rotation.

8.6 Selection of direction of rotation

(not for SB 660)

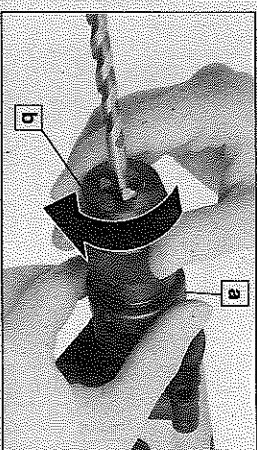
⚠ Do not actuate the rotation selector switch (14) unless the motor has completely stopped.

Select direction of rotation:

R = clockwise
L = counter-clockwise

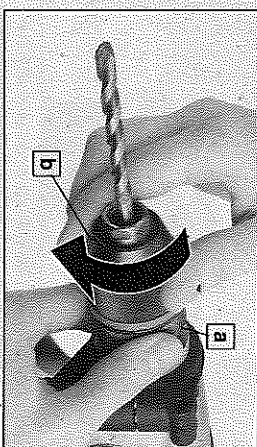
⚠ The drill chuck must be firmly screwed onto the spindle and the safety screw inside the drill chuck (if applicable / model-specific) must be firmly tightened with a screwdriver. (Caution, left-handed thread.) If rotated counterclockwise (e.g. when screwing) it could otherwise become loose.

8.7 Tool change with Futuro Top keyless chuck (3)



Insert tool. Grip the retaining ring (a) firmly and, with the other hand, turn the sleeve (b) against the stop. To open the drill chuck grip the retaining ring (a) firmly and turn sleeve (b) in the opposite direction.

8.8 Tool change with Futuro Plus keyless chuck (2)



Insert tool. Grip the retaining ring (a) firmly and, with the other hand, turn sleeve (b) towards GRIP, ZU", until the mechanical resistance which can be felt is overcome.

Caution! The chuck is not yet fully tightened! Keep turning (there is a clicking sound while turning), until further turning is no longer possible - only now is the tool securely tightened.

When using soft bit shanks, it may be necessary to retighten the chuck after a short period of operation.

Opening the drill chuck:

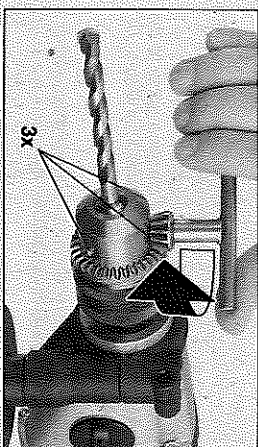
Grip the retaining ring (a) firmly and, with the other hand, turn the sleeve (b) towards AUF, RELEASE.

Note: The ratchet sound which can possibly be heard after opening the drill chuck, is functional and is switched off by a reverse rotation of the sleeve.

If the tool is fitted very tight:

Unplug. Hold drill chuck with an open end spanner at the jaw opening and turn sleeve (b) firmly towards AUF, RELEASE.

8.9 Tool change with geared chuck (1)



Fitting the tool:
Insert the tool and tighten evenly with chuck key in all three 3 holes.

Removing the tool:
Open the geared chuck with the chuck key and remove tool.

8.10 Contact mode

(SBE 850 Contact)

To enable the contact mode press button (8).

If required, e.g. for drilling into steel girders or steel-reinforced concrete walls, the contact mode can be disabled by pressing the switch button (8). The contact mode indicator (7) shows the current setting:

Green: contact mode enabled.

Red: machine has switched off because contact was made with conductive, earthed material or a live supply cable.

⚠ Pull machine back and bit out of the hole immediately. Have possible damage properly repaired.

Off: contact mode disabled.

8.11 Pulse function

(SBE 850 pulse)

Adjust via the thumbwheel (9).

Pulse function constantly switched On
+ Pulse function Off (for drilling)

Recommended settings for screwdriving, for example, into wood (soft screwdriving):

Ø	
4.0	B2
4.5	B3
5.0	C3
6.0	C4
8.0	D5

8.12 Torque limiter

(SBE 850 pulse)

Upon attainment of the preselected torque the motor comes to a standstill. Adjust via the thumbwheel (9). (positions 1 - 6).

- 1 Upon attainment of a low torque the motor comes to a standstill.
- 6 Upon attainment of a high torque the motor comes to a standstill.

8.13 Removing the drill chuck Keyless chuck Futuro Top (3)

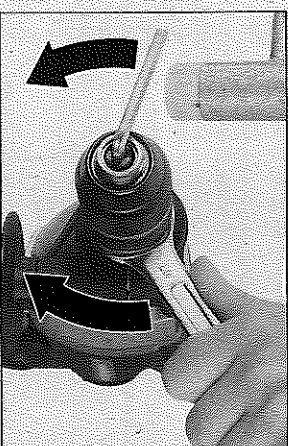


Remove the chuck with two open end spanners.

Keyless chuck Futuro Plus (2)

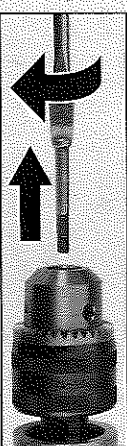


Remove locking screw. Caution: left-handed thread!

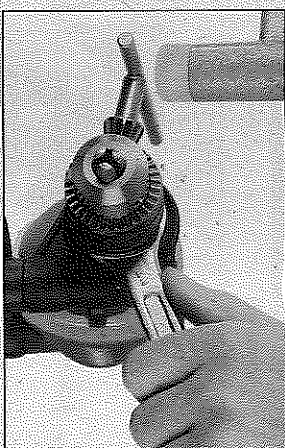


Hold machine spindle with an open end spanner. With a rubber mallet tap lightly on a chucked Allen key to loosen the chuck.

Geared chuck (1)



Remove locking screw. Caution: left-handed thread!



Hold machine spindle with an open end spanner. Loosen chuck by lightly tapping on the inserted key with a rubber mallet, then remove fully.

9 Tips and Tricks

When drilling deep holes, pull the drill bit out of the hole from time to time to clear the stone dust or chips.

Drill tiles and other brittle materials without impact. To start drilling without centering, activate the impulse mode (SBE 850 Impuls).

For screw driving the drill chuck can be removed. Insert screwdriver bit directly into the spindle's hexagon socket.

Attach the screwdriver-bit retaining bush to hold the screwdriver bit.

For tapping (not SB 660), apply a little cutting oil to the tap. Select a low speed and . Set for clockwise rotation and tap hole, stop machine and switch to counter-clockwise rotation to remove tap.

10 Maintenance

Keyless chuck cleaning:

After prolonged use hold the chuck vertically, with the opening down, and fully open and close it several times. The dust collected falls from the opening. The application of cleaning spray to the jaws and jaw openings at regular intervals is recommended.

11 Trouble Shooting

If the trigger (13) can not be depressed, check to see that the rotation selector switch (14) is fully set to position R or L (not SB 660).

SBE 850 pulse: When the machine is switched on, if the thumb-wheel (9) is turned from pulse function to torque control, the machine will switch off automatically. Switch the machine off and then back on again.

Electronic signal indicator (10) (SBE 1010 Plus)

Rapid flashing - restart protection
When power is restored after a power failure, the still switched-on machine does not start for safety reasons. Switch machine off, then on again.

Slow flashing - carbon brushes worn
The carbon brushes are almost completely worn. If the brushes are completely worn, the machine switches off automatically. Have the brushes replaced by an authorized service centre.

Permanently lit - overload
In the event of prolonged overloading of the machine, the power input is limited to prevent a further inadmissible temperature rise of the motor. Let machine cool down by letting it run at high speed under no load.

12 Accessories

Use only genuine Metabo accessories.

If you need accessories, check with your dealer. For the dealer to select the correct accessory, he needs to know the exact model designation of your power tool.

See page 4.

- A Metabox
- B Angle Drilling and Screwdriving Attachment
- C Flexible Shaft
- D Rubber Backing Pad
- E Liner-backed Sanding Discs
- F Drill Stand
- G Drill clamp can be rotated by 360°;
- G Moulding & Drill Stand
- H Column with toothed rack and guide groove)
- H Machine Vice
- I Steel-wire End Brush
- J Steel-wire Cup Brush
- K Steel-wire Wheel Brush
- L Fitting bit spring

For complete range of accessories, see www.metabo.com or the main catalogue.

13 Repairs

Repairs to power tools must be carried out by qualified electricians ONLY!

Any Metabo power tool in need of repair can be sent to one of the addresses listed on the page before the last page.
Please attach a description of the fault to the machine.

14 Protection of the Environment

Metabo's packaging can be 100% recycled.

Worn out power tools and accessories contain considerable amounts of valuable raw and plastic materials, which can be recycled.

These instructions are printed on chlorine-free bleached paper.

Only for EU countries: Never dispose of power tools in your household waste! In accordance with European Guideline 2002/96/EC on used electronic and electric equipment and its implementation in national legal systems, used power tools must be collected separately and handed in for environmentally compatible recycling.

15 Technical Specifications

Explanatory notes on the information on page 2. Changes due to technological progress reserved.

- P₁ = rated input
- P₂ = rated output
- n₁ = no-load speed
- n₂ = load speed
- ø max = max. solid drill diameter
- S max = max. impact rate
- b = drill chuck clamping capacity
- G = spindle thread
- H = spindle with hexagon socket
- m = weight
- D = spindle collar diameter

Vibration total value (vector sum of three directions) determined in accordance with EN 60745

a_{h,D} = Typical estimated acceleration in the hand/arm area (Impact drilling in concrete)

K_{h,D} = Uncertainty (vibration)

The vibration emission level given in this information sheet has been measured in accordance with a standardised test given in EN 60745 and may be used to compare one tool with another. It may be used for a preliminary assessment of exposure.

The declared vibration emission level represents the main applications of the tool. However if the tool is used for different applications, with different accessories or poorly maintained, the vibration emission may differ. This may significantly increase the exposure level over the total working period.